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## A SUMMER'S BOTANIZING IN EASTERN MAINE AND WESTERN NEW BRUNSWICK.

M. L. FERNALD AND K. M. WIEGAND.

### Part I. GENERAL NOTES ON THE SUMMER TRIP.

WHEN the time came for the final arrangement of our summer plans in 1909 we abandoned various ambitious schemes of going with our families to wild and unmapped northern regions and cast about for an area nearer home where we could combine a cool climate and a comparatively unexplored flora. This combination was finally discovered when we hit upon the easternmost section of Washington County, Maine. Although no regions of New England have been botanically explored with detail sufficient to preclude the possibility of discovering novelties or extending known ranges, we had a reasonably good superficial knowledge of the flora of the western half of the coast of Washington County from collections made at various points as far east as Machias and Cutler; but from east of Cutler the largest collections of vascular plants available were a small series of specimens gathered at Lubec in 1828 by that pioneer botanist in many New England regions, William Oakes, and a more representative collection made about North Lubec in the summer of 1902 by Miss Kate Furbish.

In Hovey's Magazine, in 1844, appeared "Some Remarks on the Botany, &c., of Eastport, Me., and its Vicinity," by "X," who, however, confined his remarks chiefly to an enthusiastic account of the astonishing fertility of the soil, the wide fame of Eastport potatoes, and a discussion of the planted trees and shrubs. This account of Eastport, which gives little detail about the native vascular plants,

contains the statement that "Its soil is rich and its crops are exuberant, affording to the enterprising farmer not only the comforts but some of the luxuries of life."<sup>1</sup> Contrasted with this most tempting picture of the fertility of the easternmost coast of Maine is the account given by William Oakes in a letter to his friend, Dr. James W. Robbins. Oakes, writing under date of August 14, 1828, said: "The greater part of July I have spent 'down East' even as far as Quoddy Head which lieth more eastward than Eastport. I have seen there however but few plants new to N. E. & am convinced that no great accessions to the N. E. Flora, and of absolutely new plants hardly any, are to be expected from the State of Maine."<sup>2</sup> These very different accounts of the Eastport district, one a picture of "exuberant" vegetation, the other of hopeless paucity of the flora, made it of more than usual interest to explore a region which could produce such contrasting effects upon the minds of casual observers. So on the morning of July 6th we were all assembled at the house of Mrs. A. C. Bridges in Pembroke, where we were to have a pleasant home for six weeks, and a workroom with impromptu tables was soon established in the barn, with abundant drying facilities on the woodpile.

Pembroke is situated on one of the northwestern arms of Cobscook Bay, which extends westward with antler-like branches from opposite the islands of Passamaquoddy Bay. It had been selected as a center for work because at Ayer's Junction, in the northwestern part of the town, the Washington County Railroad forks and we could, by means of the trains, extend our explorations east to Eastport, north to Calais and Princeton, or southwest and west as we should wish. The summer's work in Washington County actually covered much of the town of Pembroke and adjacent areas in Dennysville, Charlotte, and Perry; Moose Island in Passamaquoddy Bay, upon which is situated the town of Eastport; the eastern and southern coasts of Lubec, from Lubec village to Bailey's Mistake; and casual observations in Trescott and Whiting. Northward, the valley of the St. Croix was followed from above St. Croix Junction to Milltown and for a couple of miles below the city of Calais, and a day was spent along the course of the river between Baileyville and Princeton.

To the person from farther west, who has somehow gained the

<sup>1</sup> "X," Hovey's Mag. x. 405 (1844).

<sup>2</sup> Wm. Oakes to Dr. J. W. Robbins in letter now in possession of Mr. Walter Deane.

impression that eastern Maine is a vast wilderness, it is of great interest to find that these towns of eastern Washington County have a decided dignity and air of maturity and contentment. Several of them, in fact, were thriving communities before the end of the 18th century and Eastport (then including a part of Lubec) had become an incorporated town. Throughout this area we watched optimistically for the rich soil and exuberant crops of X's report, but if such spots existed sixty-odd years ago they were quickly built upon and not left in their primitive condition for the gratification of the present generation of botanizers. We had also been led, through the discussions in geological reports of remarkable limestone outcrops in Pembroke and elsewhere in the region, to expect a considerable degree of fertility, but the outcrops proved to be noteworthy chiefly because of the fossils they contain or for their very limited extent. Where they were found, however, we were gratified to note signs of increased fertility and an unusual abundance of *Crataegus*, or in the swamps of such plants as *Rhamnus alnifolia* L'Her. In general, however, the region is composed of highly silicious or argillacious soils, with basalts on the outer coast, and seemed to us as infertile as much of the already familiar rocky coastal strip of eastern New England.

The first impression one gains on reaching Pembroke at night or in the early morning is that he is surrounded by a typical Canadian flora. The northern *Pinaceae* — *Abies balsamea* (L.) Mill. and its var. *phanerolepis* Fernald,<sup>1</sup> *Picea canadensis* (Mill.) BSP., *Larix laricina* (Du Roi) Koch with either greenish or purplish cones, and *Pinus resinosa* Ait.—giving the prevailing tone to the forests. The first short walk before dinner introduced us to *Carex Houghtonii* Torr. and *C. aenea* Fernald, *Eriophorum angustifolium* Roth, *Salix balsamifera* Barratt, *Alnus mollis* Fernald, *Rubus canadensis* L., *Euphasia americana* Wettst., *Aster Lindleyanus* T. & G., *Senecio Robbinsii* Oakes, and other Canadian plants which afterward were seen almost daily. The fields and roadsides presented an appearance rather unexpected, for everywhere from Eastport to Pembroke and beyond (presumably to Cutler and Machias) were solid fields brilliantly yellow in early July with one of the King Devil Weeds, *Hieracium floribundum* Wimm. & Grab., which was found by Dr. Kennedy at Cutler in 1901<sup>2</sup> and is now the worst pest of eastern Washington

<sup>1</sup> RHODORA, xi. 203 (1909).

<sup>2</sup> G. G. Kennedy, RHODORA, iv. 25 (1902)

County and adjacent New Brunswick, taking the place in this region of the Orange Hawkweed, *Hieracium aurantiacum* L., which has overrun fields of central and southern Maine but which is just entering the Passamaquoddy Bay region. In many damp fields and in roadside-ditches and thickets was a narrow-leaved Dock with stout bluntish columns of pale green, finally brownish, fruits. This was the only Dock abundant in the area and though it was clearly *Rumex Patientia* L. (supposed to be introduced) it often seemed as if quite as native as the scarcer and later-flowering *R. Britannica* L. of the swamps.

The development of these easternmost towns of Maine somewhat apart from the more westerly sections of New England is shown not only in the almost exclusive interest of the people of the coastal towns in the packing of sardines (or "near" sardines) or of the people of Calais in lumbering, but in the absence of many of our common weeds and other introduced plants and the presence of others (besides those noted above) unfamiliar in southern New England. Thus our common *Digitaria sanguinalis* (L.) Scopoli, *Ranunculus bulbosus* L., *Chelidonium majus* L., *Trifolium agrarium* L., and *Daucus Carota* L. are unknown or exceedingly rare, while *Alopecurus geniculatus* L., *Brassica alba* (L.) Boiss., *Trifolium procumbens* L., *Carum Carvi* L., *Matricaria inodora* L. and *M. Chamomilla* L., var. *coronata* (J. Gay) Cosson & Germain (see below) are among the commonest weeds. And though in most regions of New England the common planted willow is *Salix alba*, *S. fragilis* or one of their varieties or hybrids, or in other districts *S. viminalis*, in the region from Pembroke to Eastport and Lubec the common planted willow of the roadsides, now escaped and thoroughly established in thickets, is the European *S. Smithiana* Willd., a handsome species (or perhaps hybrid) with the lanceolate to oblong rugulose entire leaves satiny beneath.

Though in its general flora characteristically Canadian in type, the eastern section of Washington County presents two striking departures from the typical Canadian vegetation. These departures are singularly enough toward opposite extremes. As already emphasized by Dr. Kennedy in his notes on some of the plants of Cutler, there are many subarctic plants upon the outer coast east of Machias Bay, from which point "to Quoddy Head, a distance of about 25 miles, we have a bold shore with a full east exposure, open ocean, treacherous currents, and much fog. It is the entrance to the Bay of Fundy and from fifteen to twenty miles off shore lies Grand Manan Island with its

cliffs and fog. The Bay of Fundy, some sixty miles wide at its mouth, extends one hundred and fifty miles northeasterly, and uninfluenced by warmer currents from the southern ocean areas, maintains its well-earned reputation as a cold wet sea.”<sup>1</sup> In the humus and heathy turf at the crests of these outer sea-cliffs and extending up Passamaquoddy Bay often as far as the eastern crests of Moose Island occur several plants which, though known slightly south of this area, are decidedly more common on the coasts of Newfoundland or Labrador. Among such plants are *Juniperus horizontalis* Moench, which was found extending up the Bay to one of the outer points in Pembroke and which follows the coast at least to southern Maine; *Iris setosa* Pall., var. *canadensis* Foster (*I. Hookeri* Penny), first noted in the United States at Cutler<sup>2</sup> but now known to extend south on the outer coast and islands to Great Cranberry Isle;<sup>3</sup> *Amelanchier oligocarpa* (Michx.) Roem., in 1909 remarkably loaded with plump juicy fruit; *Empetrum nigrum* L., wherever there is a good carpet of humus or peat; *Coelopleurum actaeifolium* (Michx.) C. & R., either on the crests, slopes or beaches; *Solidago macrophylla* Pursh, in half-shade; and *Euphrasia Randii* Robinson, with tiny, striped lilac or crimson flowers. In the more sterile places where the humus is thin and dry, as on Dog Island off Eastport or in spots on West Quoddy Head, *Euphrasia Randii*, var. *Farlowii* Robinson abounds and we were glad of several opportunities to contrast the two extremes of the species. It was while thus occupied on Dog Island, a small bare islet which is connected at low tide with Moose Island, that we had a memorable experience with the tremendous tide of these waters. We had left our rucksacks on the beach of Moose Island several feet above the water and walked dry-shod across to Dog Island where we were soon absorbed in gathering and examining the local *Euphrasia*. Suddenly looking up we saw our rucksacks nearly afloat, a swift current three feet deep rushing between us and the opposite shore, and large vessels which five minutes before had been making good headway down the Bay swept swiftly up the Bay by the rush of the incoming tide. Our collecting boxes and rucksacks (containing lunch) were soon to be overcome by the waters when a canoe with four Passamaquoddy Indians came in sight and saved us from our humble situation. But to return to the subarctic

<sup>1</sup> G. G. Kennedy, l. c. 23.

<sup>2</sup> See Kennedy, RHODORA, iv. 24 (1902); J. F. Collins, *ibid.* 179.

<sup>3</sup> E. L. Shaw, RHODORA, x. 145 (1908).

vegetation. In a rill trickling over one of the basaltic cliffs at Cutler *Montia lamprosperma* Cham. (see below) has been found, though in two hurried days along the Lubec shore we did not notice it. But on the sheer cold cliffs, below the humus-capped crests, were plants familiar at Cutler, such as *Sagina nodosa* (L.) Fenzl (typical)<sup>1</sup> and *Sedum roseum* (L.) Scop., and the rather ornamental annual *Senecio sylvaticus* L., which, though supposed to be introduced from Europe, avoids in a most remarkable way the cultivated areas in which the related *S. vulgaris* L. abounds. On the Nova Scotia coast of the Bay of Fundy and along the Maine coast as far south as the mouth of the Kennebec *S. sylvaticus* is a characteristic plant of rock-crevices, abounding particularly on the cold basaltic and granitic sea-cliffs.

In the heaths or raised peatbogs which abound close to the sea in this outermost coastal strip of eastern Maine are many other sub-arctic plants which disappear abruptly when we go inland only a short distance — often only a few rods — from the shores of the Bay of Fundy or the Atlantic. The heath-formation occurs not only in depressions or on plains where the close carpet of *Sphagnum*, *Empetrum*, &c. arches toward the center into a low dome, but in many places near the sea this heath- or bog-vegetation climbs the rocky hummocks and slopes, thus forming a continuous undulating or even abruptly sloping boggy carpet such as is familiar in the alpine regions of many of our mountains. A very characteristic example of this type was explored at the base of West Quoddy Head, Lubec, where the coastal edge of the bog (along Passamaquoddy Bay) forms a dark brown escarpment visible for some distance up the Bay, suggesting that the bog may have had a history similar to that of the Wood's Hole bog recently described by Mr. H. H. Bartlett.<sup>2</sup> Practically all the vascular plants of this Quoddy Head heath were such as one would expect above tree-line on Mt. Katahdin or Mt. Washington or in the subarctic tundra of Labrador — *Scirpus caespitosus* L., *Carex pauciflora* Lightf., *Comandra livida* Richardson, *Rubus Chamaemorus* L., *Empetrum nigrum* L., *Vaccinium pennsylvanicum* Lam., var. *angustifolium* (Ait.) Gray, *Aster radula* Ait., var. *strictus* (Pursh) Gray, etc. — but the most conspicuous plant at the time of our visit was *Gaylussacia dumosa* (Andr.) T. & G., forming dense depressed shrubs only 1 or 2 decimeters high, closely embedded in the *Sphagnum*, and loaded with beautiful white

<sup>1</sup> See Kennedy, l. c. 24.

<sup>2</sup> RHODORA, xi. 221-235 (1909).

or pink-tinged bells. The distribution of this very distinct *Gaylussacia* is notable, for it occurs in bogs and wet swamps all the way from Newfoundland to Louisiana, in New England at least rarely extending far from the coast. Yet the plants with which it is associated in the Lubec bog and elsewhere in eastern Maine are chiefly polar types which do not extend far southward into the temperate areas of eastern America.

The transition from the wetter portion of the heath at West Quoddy Head to the dry humus of the slopes and crests on the one hand is almost imperceptible, while in a lower depression at one edge of the bog the transition to brackish conditions is equally gradual. In this depression one of the most abundant plants is *Triglochin palustris* L. which follows the coast in brackish situations as far as Wells. Other plants of adjacent brackish and saline marshes are decidedly boreal species or varieties: *Carex norvegica* Willd., *C. salina* Wahlenb., var. *fuliginea* Blytt.,<sup>1</sup> *Rumex occidentalis* Watson, *Stellaria humifusa* Rottb., &c.; while the comparatively northern *Juncus bufonius* L., var. *halophilus* Buchenau & Fernald, *Polygonum Fowleri* Robinson, and *Galium trifidum* L., var. *halophilum* Fernald & Wiegand<sup>2</sup> are occasionally found. And in scattered heaths and boggy depressions, though not noticed in the heath at West Quoddy Head, were *Lycopodium annotinum* L., var. *pungens* Desv., the characteristic extreme of the species as it occurs on our alpine summits and in Labrador, and *Carex vaginata* Tausch, one of the common alpine sedges of the Shick-shock Mts.; and in humus at Kingsport, on the Basin of Minas, at the head of the Bay of Fundy, *Loiseleuria procumbens* (L.) Desv. of our Arctic and subarctic barrens and alpine tablelands has been found.

In general this narrow coastal subarctic strip extends along the outer mainland and islands to Great Cranberry Isle, and in less pronounced development to Monhegan and even beyond, so that it will be interesting to watch at some of the more southwesterly stations for plants which as yet are not known west of the Washington County coast — such as *Lycopodium annotinum*, var. *pungens*, *Carex vaginata*, *Juncus bufonius*, var. *halophilus* (also on Plum Island, Essex Co., Massachusetts), *Comandra livida*, *Rumex occidentalis*, *Sagina nodosa* (typical), *Euphrasia Randii*, var. *Farlowii*, *Galium trifidum*, var. *halophilum*, *Solidago macrophylla*, and *Aster radula*, var. *strictus*.

<sup>1</sup> Our plant is var. *fuliginea* Blytt, Norg. Fl. i. 219 (1861) and, according to Kükenthal, not var. *cuspidata* Wahlenb. which is typical *Carex salina*.

<sup>2</sup> See RHODORA, xii. 78 (1910).

Inland from the subarctic coastal belt of vegetation, the flora, as already stated, is chiefly of the Canadian type; but near the heads of the shallower and warmer estuaries and in the valley of the St. Croix River some southern plants which seemed singularly out of place and others which there approach or perhaps attain their eastern limits were found. Thus, along the St. Croix above Calais, for example, *Sparganium eurycarpum* Engelm. (which extends into southern New Brunswick), *Fraxinus pennsylvanica* Marsh. (extending also to the lower St. John), *Cornus Amomum* Mill., *Viburnum dentatum* L., and *Cephalanthus occidentalis* L. are close neighbors of the northern *Carex chordorhiza* L. f. which above Milltown literally covers the river-meadow and there attains one of its southern limits. At Princeton the large yellow-flowered Water Crowfoot, *Ranunculus delphinifolius* Torr. carpets a mill-pond. On a sandy plain in Charlotte various southern types were seen, among them *Oenothera cruciata* Nutt., previously unknown east of the Penobscot valley, *Lechea intermedia* Leggett, and various species of *Panicum*; and in the sandy margin of Round Pond in Charlotte *Xyris caroliniana* Walt., reaches its easternmost known limit. In warm or sheltered situations in Pembroke other southern types were seen: *Carex albolutescens* Schwein. in rocky woods, *C. pennsylvanica* Lam., var. *lucorum* (Willd.) Fernald carpeting the sunny slope of an esker, *C. umbellata* Schkuhr, var. *tonsa* Fernald in profusion on a dry southerly slope, *Amelanchier canadensis* (L.) Medic., var. *tomentula* Sargent<sup>1</sup> on a dry ridge, *Pedicularis canadensis* L. in oak woods, *Antennaria Parlinii* Fernald beneath Sugar Maples; and in a sterile meadow a profusion of *Oenothera fruticosa* L., var. *hirsuta* Nutt., in full flower, as the splendid climax of a rainy day which had already shown us *Juncus dichotomus* Ell., var. *platyphyllus* Wiegand (extended northeastward from York and Cumberland Counties) growing in a swamp near where the rigid densely bunched *Juncus Vaseyi* Engelm. attains one of its southernmost known stations.

The distribution of *Oenothera fruticosa* and its var. *hirsuta* in Maine is not well understood. Various reports of *O. fruticosa* in the state have been based upon large forms of *O. pumila* L. and there is no positive evidence of the typical *O. fruticosa* in Maine. The var. *hirsuta* grows in profusion in open woods on the warm gravelly slope

<sup>1</sup> See RHODORA, xi. 47 (1909).

of an esker in the Penobscot Valley, and the related *O. pratensis* (Small) Robinson occurs on the dyked marsh at Wells (*Miss Furbish*) and at Hartford (*Parlin*). Other stations for members of the group need verification. Whether or not such plants as *Ranunculus delphinifolius*, *Oenothera cruciata*, *O. fruticosa*, var. *hirsuta*, &c., are really isolated in the warmer situations about the heads of Passamaquoddy and Cobscook Bays and in the St. Croix Valley is of course futile at present to discuss; but the presence, a few miles back from the coast, of a more or less continuous series of sand plains and barrens (such as the famous blueberry barrens north and west of Northfield and similar barrens which stretch all the way from Columbia and Cherryfield to Spectacle Pond and beyond)<sup>1</sup> makes it probable that further exploration will show these plants to extend somewhat generally across southern Washington County. Here, at least, is an interesting problem for those who are situated where they can explore these plains and barrens.

During our stay at Pembroke we were introduced to several food-plants which were new to our experience. The first of these was the "Waterberry," *Lonicera caerulea* L., var. *villosa* (Michx.) T. & G., which we enjoyed in some abundance for three weeks before the ripening of the Blueberries which Waterberries resemble both in appearance and taste. Another berry which was so abundant as to be quickly gathered was the Sugar Pear, *Amelanchier canadensis*, which was used in making delicious pies, in flavor resembling cherry pie. Baked Apple, *Rubus Chamaemorus* L., was an old friend of one of the party who had reveled in it on Table-top Mt., but wherever we saw it in Maine it fruited sparingly and was not up to the standard in flavor. We heard much of "Goose-tongue" as "greens" which grew along the seashores, so, supposing the name to be a modification of "Goose-foot", brought in quantities of young *Chenopodium album* L. and *Atriplex patula* L., var. *hastata* (L.) Gray, which we already knew to be among the best of greens; but we were told that Goose-tongue was entirely different, and not until we saw women walking into Lubec with baskets of the leaves of *Plantago decipiens* Barneoud were we able to identify it. The *Plantago* proved an acceptable spinach and one worth remembering in June and July.

By the first of August, the season when the early plants were all

<sup>1</sup> For detailed discussion see George H. Stone's "The Glacial Gravels of Maine", Mon. U. S. Geol. Surv. xxxiv. (1899).

collected, the later ones not ready to collect, and the clumps of tagged *Crataegus* and *Rubus* between flowering and fruiting, botanizing became arduous and we found ourselves lingering too long on the blueberry barrens, since, in order to get small returns in "different" things, we were forced to cover many miles of hard and comparatively sterile country. So it was decided that this was the favorable time for the two men of the party to make a trip they had talked of, up the St. John and into "the Aroostook," at the same time giving the ladies an uninterrupted week for reading, driving, and picnicking without the responsibility of washing the roots of our specimens whenever we chanced to bring in full boxes. Accordingly we went by the New Brunswick Southern Railway from St. Stephen to St. John through a coastal region much of which suggested conditions like those about Lubec. On the morning of August 6th we reached the picturesque camp of Dr. G. U. Hay at Ingleside, on the St. John in the town of Westfield, about four miles below the mouth of the Nerepis River. Here we were cordially received by Dr. and Mrs. Hay in the camp and wild garden already known to several readers of RHODORA. We were very obviously in the St. John Valley, for in the rich alluvium of the river were many plants familiar from above St. Francis to Woodstock.—*Calamagrostis neglecta* (Ehrh.) Gaertn., Meyer & Scherbius, *Salix lucida* Muhl., var. *intonsa* Fernald, *S. pellita* Anders. and *S. coactilis* Fernald, *Thalictrum confine* Fernald and *Tanacetum huronense* Nutt.—with several unknown or rare on the Upper St. John, such as *Salix nigra* Marsh., *Fraxinus pennsylvanica* Marsh., and *Stachys palustris* L. A short distance from his camp Dr. Hay showed us a fine specimen of *Acer rubrum* L., var. *tridens* Wood (noted below), and in short walks in the neighborhood other notable plants were seen—*Panicum tennesseense* Ashe, *P. implicatum* Scribner, *Glyceria laxa* Scribner and *Lycopodium sabinaefolium* Willd.

One afternoon and evening were given to a sail up the lower reaches of the St. John and the quiet winding channel of the Nerepis River. The meadows along this stream were luxuriant to a degree and we longed for more time than was available to explore them. Shoulder-high stood a dense thicket of *Scirpus pedicellaris* Fernald, *S. cyperinus* (L.) Kunth, var. *pelius* Fernald, *Zizania aquatica* L., *Sparganium eurycarpum* Engelm. and other marsh plants not generally known from so far east; and in deep water, forming broad dense islands nearly covered at high tide but rising at low tide a meter above the

surface, stood acres of clumps of *Scirpus fluviatilis* (Torr.) Gray, a stately bulrush once reported as growing at Perry, Maine, but heretofore unverified from east of the lower Merrimac. About Passamaquoddy Bay we had grown callous to the attractions of *Potentilla palustris* (L.) Scop., var. *villosa* (Pers.) Lehm., but at twilight a beautiful silvery variation of the species was found on the Nerepis marshes and a single specimen taken in the dim light "for locality," under the impression that it was var. *villosa*. Later, however, too late to return for more, it proved to be var. *subsericea* Becker (see below) a very beautiful plant, worthy a place among cultivated semi-aquatics.

A portion of another day was devoted to an interesting meeting of the Natural History Society of New Brunswick, held at the picturesque summer-cottage of Senator Ellis, in full view of the gorge and falls at the mouth of the St. John River, where are found *Saxifraga aizoon* Jacq. and some other boreal calciphile plants. Along the river near Senator Ellis's cottage we saw *Juncus alpinus* Vill. which is common farther north; and while waiting for our return train we found the yard of the Canadian Pacific Railway at Fairville a veritable garden of ballast weeds, chiefly brought from the West,—*Gilia linearis* (Nutt.) Gray, *Ambrosia trifida* L., var. *integrifolia* (Muhl.) T. & G., *Artemisia ludoviciana* Nutt., *A. frigida* Willd., etc.

On Monday morning, August 9, accompanied by Dr. Hay, we started for Fort Fairfield near the mouth of the Aroostook River, reaching there in time for a short walk along the river before supper. Fort Fairfield for nearly a dozen seasons (at intervals since the early 60's) has furnished all the interesting material visiting botanists have been able to put up; and, although it was a familiar region to one of the party, he found at the end of the third day that, in spite of good resolutions to the contrary, his trunk was full of specimens and a large package had to be shipped to Pembroke by express. After the sterile coastal region of eastern Maine it was indeed a delight to find ourselves in a rich limestone country where we struggled through tangles of *Salix glaucophylla* Bebb and *S. pellita* Anders., with *Onoclea Struthiopteris* (L.) Hoffm. and *Bromus altissimus* Pursh brushing our faces, and *Lilium canadense* L., with ten to twenty flowers, and *Cirsium muticum* Michx. towering above our heads. Our limited time and two days of drenching rain forced us to restrict our botanizing to the shores of the Aroostook River, so, equipped with rubber coats, slouch hats and storm rubbers, we went first to the gravelly shore

back of the Collins House, a spot already familiar to a score of readers of RHODORA, where in June the gravel is brilliant with *Viola nephrophylla* Greene, *Primula mistassinica* Michx., and *Senecio Balsamitae* Muhl., with the less obvious but fully as interesting *Carex Crawei* Dewey (known from but one other station in New England — Salisbury, Connecticut) and the commonly alpine *C. scirpoidea* Michx., and *Scirpus Clintonii* Gray, a species which in central and northern Maine replaces the more southern *S. planifolius* Muhl. In early August this gravel was bright with a very luxuriant and freely flowering form of *Aster junceus* Ait. with flesh-colored rays, *Parnassia caroliniana* Michx. with large creamy-white flowers, *Potentilla fruticosa* L., a mass of golden bloom, and *Lobelia Kalmii* L. with its delicate blue and white flowers, while the misty-crimson panicles of *Prenanthes racemosa* Michx. were beginning to expand. But fully as interesting to the botanist from southern New England was the slender wiry *Sporobolus Richardsonis* (Trin.) Merr. which forms a dense mat in the edge of the river-thicket as it does throughout the upper St. John River system.

The northern half of Maine had suffered from excessive rains during July and was still suffering from them in early August, and at the time of our visit the thicket above the bridge was still loaded with comparatively fresh silt and driftwood. *Potentilla Anserina* L. (typical)<sup>1</sup> which abounds along the river at this point, had consequently failed to set fruit and many other plants had a drowned appearance. But at the spring where *Kobresia elachycarpa* Fernald (now overripe and unrecognizable) was first found<sup>2</sup> we paid our respects not only to the clear water but to the colony of plants which has already supplied scores of New England herbaria with *Equisetum variegatum* Schleicher, *Triglochin palustris* L., *Calamagrostis neglecta*, *Juncus brachycarpus* (Engelm.) Buchenau and *J. alpinus* Vill. In the thicket on the river-terrace *Castilleja pallida* (L.) Spreng., var. *septentrionalis* (Lindl.) Gray, *Aster macrophyllus* L., var. *sejunctus* Burgess, and *Anemone canadensis* L. were in their prime; and on the gravel were *Tofieldia glutinosa* (Michx.) Pers. with bright reddish capsules, *Allium Schoenoprasum* L., var. *sibiricum* (L.) Hartm. with heads resembling those of Red Clover, *Astragalus alpinus* L., var. *Brunetianus* Fernald, with delicate dark and light lavender and white flowers, and *Tanacetum*

<sup>1</sup> See RHODORA, xi. 8 (1909).

<sup>2</sup> See RHODORA, v. 247-251 (1903).

*huronense* Nutt., with ashy plumose foliage and large golden button-like heads.

On the broad river-beach below the Canadian Pacific station *Hedysarum boreale* Nutt. was in fine fruit, with an occasional lingering raceme of crimson flowers, and *Prunus pumila* L., which formed an extensive carpet was tantalizingly near ripeness — just green enough to be still inedible. In the thicket *Thalictrum confine* Fernald<sup>1</sup> was already over-ripe, but *Trisetum melicoides* (Michx.) Vasey and *Scutellaria Churchilliana* Fernald were in fine condition, and in the shade of the thicket were *Equisetum pratense* Ehrh. (formerly known from the upper St. John and the Kennebec valleys), *Viola Selkirkii*, Pursh, always local enough to be interesting, and *Pyrola asarifolia* Michx. in good fruit. Our walk in this direction took us nearly to the talus slope where *Astragalus eucosmus* Robinson abounds at its only New England station, but the already long-ignored dinner-bell and the plans for the afternoon forced us to turn back.

The northern bank of the river, always fruitful in good things, maintained its established reputation for *Juncus balticus* Willd., var. *littoralis* Engelm. and *Triglochin maritima* L. (two maritime species here more than 100 miles from the nearest salt water), *Potentilla arguta* Pursh, *Polygala Senega* L., &c.; and we found in the rich thicket two species which had not before been known so far north in Maine,—*Agrimonia gryposepala* Wallr. and *Osmorhiza longistylis* (Torr.) DC.

The last day of the Fort Fairfield trip was devoted to the cold cliffs and springy banks about the Aroostook Falls and the gorge of the river, which lie wholly in New Brunswick. The Aroostook Falls have long been known to some readers of RHODORA as the most picturesque portion of the river system and a region as rich in botanical as in scenic interest. It was, therefore, a bitter disappointment, after driving out from Fort Fairfield along the northern bank of the river to find the great wooded slope, which formerly extended from the road to the Falls and where various comparatively southern plants — *Cynoglossum boreale* Fernald, *Scrophularia leporella* Bicknell, and *Triosteum aurantiacum* Bicknell — have been found, was now a stretch of charred stumps and black skeleton-trees, burnt rocks and ashes as far as the eye could see. The fire had extended quite to the edge

<sup>1</sup> All the eastern material which in RHODORA, ii. 232, 233 (1900) was referred to *T. occidentale* Gray proves upon further acquaintance to be *T. confine*.

of the gorge and had burned off long-familiar patches of *Aspidium fragrans* (L.) Sw. and *Woodsia alpina* (Bolton) S. F. Gray. To complete the shock to a former lover of the Falls, a dam had been constructed and a large power-plant occupied a conspicuous place in the Basin. But neither the forest-fire nor the dam and the power-plant could completely obliterate the rush of the swirling water nor the grandeur of the place, and, intent upon visiting the long-known plants of the region and upon searching new spots, we were soon oblivious to the destruction which had been wrought. The rock-crevices, as always, were full of *Anemone multifida* Poir., *Viola labradorica* Schrank, *Solidago racemosa* Greene and *S. hispida* Muhl.; and, as on former trips, in the wet springy hollows were found *Rhynchospora capillacea* Torr., *Primula mistassinica* Michx., *Lobelia Kalmii* L. (with a beautiful albino form) and *Erigeron hyssopifolius* Michx.

A "game leg" unfortunately forced Dr. Hay to abandon the lower half of the gorge and to return to smoother travel on the highroad, and we were forced to make our way without him over the ledges and through tangles to Four Falls at the mouth of the Limestone River, as it enters the Aroostook. Below the Basin the forested bank was uninjured and on the cool moist rocks *Anemone multifida* Poir., *Arabis hirsuta* (L.) Scop., *Amelanchier spicata* (Lam.) C. Koch, *Astragalus eucosmus* Robinson and *Erigeron hyssopifolius* Michx. were in much finer development than farther up-stream. At one point halfway to Four Falls we were attracted to a springy spot under the bank unusually bright with *Habenaria dilatata* (Pursh) Gray, *Parnassia caroliniana* Michx. and *Lobelia Kalmii* L.; and here we were delighted to find *Scirpus pauciflorus* Lightf. which is abundant about wet marly shores along the Limestone River in Maine but has not, apparently, been reported from New Brunswick, and *Arnica mollis* Hook., var. *petiolaris* Fernald at the first station east of Moxie Falls in Somerset County, Maine. Above the mouth of the Limestone River the gravelly flat is covered with an almost impenetrable tangle of *Crataegus*, with *Vitis vulpina* L. at its northeastern limit; and as we came up the bank along the Limestone, where *Carex eburnea* Boott (as yet unknown in Maine whose borders are close by) abounds, we found a fine clump of *Solidago altissima* L., already known from Fort Fairfield, though nowhere else in Maine or New Brunswick. We reached Aroostook Junction in season to wave a farewell to Dr. Hay who was obliged to start back to St. John on the afternoon train, and

we returned to "the Fort" with enough material to keep us busy until midnight.

At Fort Fairfield one who is familiar with the meagre soil and small farms of southern New England receives a sudden awakening, for in "the Aroostook," shut off from central Maine by the "Maine woods," the cultivated fields stretch in undulations over the hills and plains as far as the eye can reach and the return they yield through their potatoes and grain is annually counted in millions of dollars. But a greater surprise to those who have been unfamiliar with the tremendous development and activities of eastern Aroostook County is the metropolitan character of the shire-town, Houlton, where the large stone and brick business blocks, attractive stores, and commodious houses and private grounds are in marked contrast to the appearance of agricultural communities in southern New England.

We reached Houlton in the middle of the afternoon of August 12th and having three hours before supper-time followed the Meduxnekeag River for a couple of miles toward the New Brunswick border. For the most part the banks were wooded or bushy to the water's edge and only such plants as are general in the thickets along most Maine rivers were seen, but on the occasional ledgy outcrops near the water were *Carex aurca* Nutt., *Tofieldia glutinosa* (Michx.) Pers., *Viola nephrophylla* Greene, *Primula mistassinica* Michx., and some other species which indicated the calcareous nature of the rock. In the wet sedgy spots along the river and in springy spots on the hillsides was one plant which was entirely unlooked for. This was *Carex flava* L., var. *gaspensis* Fernald,<sup>1</sup> a distinctive extreme of the species in which the perigynia are subulate and but slightly inflated and which had been known only from marly bogs and calcareous gravels of the Gaspé Peninsula.

Wishing to spend some hours on the extensive Caribou Bog in Crystal, which had been "discovered" by one of the writers in 1898, we had planned to leave Houlton early on the morning of August 13; but the discovery of the characteristic Gaspé *Carex* induced us to sacrifice half the time planned for Crystal in order to spend the forenoon in further exploration of the region. The reputed station for *Scolopendrium vulgare* Sm. at Woodstock, New Brunswick,<sup>2</sup> is near

<sup>1</sup> RHODORA, viii. 200 (1906).

<sup>2</sup> See Hay, Bull. Nat. Hist. Soc. N. B. no. ii. 31 (1883).

the mouth of the Meduxenkeag farther east, but with very limited time it was useless to attempt to locate it, so it was decided to drive westward along the river to New Limerick and to take the west-bound afternoon train there. Even then we were forced to limit our real stops to two. The first was in a typical Arbor Vitae swamp near Nickerson Lake where nothing remarkable was found, but we got excellent fruiting material of *Carex vaginata* Tausch, *Cypripedium hirsutum* Mill., *Valeriana uliginosa* (T. & G.) Rydberg, and other typical plants of such swamps. The other stop was at a point where the road approaches a muddy flat of the river which is there expanded into a broad quiet pool. This stop was made primarily to gather pond weeds, but in crossing the flat we were surprised to find ourselves walking on an extensive carpet of a tiny-fruited *Galium* which had been familiar to one of us on a marly shore in Gaspé County, Quebec, the little plant recently described by us as *G. brevipes*.<sup>1</sup> In the river with *Potamogeton zosterifolius* Schumacher was an aquatic *Sagittaria* with small floating sagittate leaves and the pistillate flowers on slender pedicels 3-6 cm. long. We were too early for fruiting material, but the young carpels resembled those of *S. arifolia* Nutt., which, however, has much shorter fruiting pedicels (0.5-2 cm. long); and the foliage of the plant is so like that shown in the original plate of *S. cuneata* Sheldon as to suggest that with further knowledge *S. cuneata* and *S. arifolia* (which have recently been treated as identical) may prove to be distinct. Returning to the carriage, we followed a spring-rivulet to its source and were delighted to find ourselves in a dense carpet of the pretty little semi-aquatic *Ranunculus Purshii* Richards. with golden flowers only 7 mm. broad. This was another plant familiar in Gaspé but heretofore unknown in New England, and, as may well be imagined, we were loath to leave such a spot and drive on to the train. But our glimpse, if only a fleeting one, was sufficient to convince us that a river-bank in Maine which, upon the most casual examination, yields *Carex flava*, var. *gaspensis*, *Ranunculus Purshii* and *Galium brevipes* is worthy an extensive exploration. In recent years many other species, common in Gaspé but formerly unknown or very local in Maine, have been found in Aroostook County,—such plants as *Selaginella selaginoides* (L.) Link, *Carex vaginata* Tausch, *C. livida* (Wahlenb.) Willd., *Juncus stygius* L., var. *americanus* Buchenau and *Drosera lin-*

<sup>1</sup> RHODORA, xii. 78 (1910).

*earis* Goldie; and there are many other near neighbors of these plants in the marly shores and bogs of Gaspé,—*Salix candida* Flügge, *S. pseudo-myrsinites* Anders., *Drosera anglica* Huds., *Parnassia parviflora* DC., *Pinguicula vulgaris* L., &c.—which may with good hope be sought in the calcareous districts of Aroostook County.

On reaching the station at New Limerick we found the gravel about the railroad yard abounding in a plant which has been known as a weed about Lake Temiscouata in Quebec since 1887<sup>1</sup> but which was quite new to our experience:—*Elsholtzia Patrini* (Lepechin) Garcke, a delicately lemon-scented mint adventive or introduced from Asia. Near by in the thicket, as if indigenous, were gigantic plants of *Iva xanthiifolia* Nutt., a plant of the West which is becoming naturalized in New England.

Caribou Bog in Crystal is too well known to many botanists to demand special description, except for the very unusual association of plants which is found there. It is a dryish marly bog with larches, spruces, and Arbor Vitae creeping in from the edges. Near the margin *Betula pumila* L. and *Lonicera oblongifolia* (Goldie) Hook. mingle with more widely known shrubs,—*Myrica Gale* L., *Pyrus melanocarpa* (Michx.) Willd., *Rhamnus alnifolia* L'Her., *Lonicera caerulea* L., var. *villosa* (Michx.) T. & G., &c. The open mucky spots are carpeted with the sprawling *Carex chordorhiza* L. f. which often seems to have ascended into the bushes by means of its long freely branching superficial rootstocks but which more probably has been left in these unusual habitats by early freshets, or the whitish green tufts of *Carex livida* (Wahlenb.) Willd.; and in many of these wetter spots are fine colonies of *Tofieldia glutinosa* (Michx.) Pers. with red capsules, *Parnassia caroliniana* L., *Utricularia cornuta* Michx., and *Lobelia Kalmii* L.; while still more locally are found beds of *Juncus stygius* L., var. *americanus* Buchenau, and *Drosera linearis* Goldie. In the slight shade of the larches or in the open are great clumps of *Phragmites communis* Trin., scattered plants of *Triglochin maritima* L., and carpets of *Pyrola asarifolia* Michx., var. *incarnata* (Fisch.) Fernald, mingled with commoner northern bog plants such as *Carex vaginata* Tausch, *Cypripedium parviflorum* Salisb., *C. hirsutum* Mill., *Habenaria hyperborea* (L.) R. Br., *Spiranthes Romanzoffiana* Cham., *Valeriana uliginosa* (T. & G.) Rydberg, &c. The open areas are comparatively dry and one can walk with ease over the dense carpet of

<sup>1</sup> John I. and Alice B. Northrop, Bull. Torr. Bot. Cl. xvii. 29 (1890).

mosses<sup>1</sup> and sedges (*Scirpus caespitosus* L., *S. hudsonianus* (Michx.) Fernald, *Carex gynocrates* Wormsk., *C. exilis* Dewey, *C. diandra* Schrank, &c.).

We went perhaps a mile back from the railroad far beyond the fringe of larches and found to the north a broad open prairie-like expanse with occasional scattered islands of small trees; and in the near distance a wonderful panorama of Mt. Katahdin. Most interesting of all the plants of this open boggy prairie was the rare and deliciously fragrant *Habenaria leucophaea* (Nutt.) Gray, somewhat like a much overgrown *H. blephariglottis* with very large creamy flowers. In the entire afternoon we saw less than a dozen plants though they were conspicuous from a distance. This extreme rarity of *Habenaria leucophaea* is of special note. No other stations are known in New England<sup>2</sup> and the species is nearly as rare in New York, but throughout the prairie region it is (or was) one of the characteristic plants in low areas. In studying the distribution of this rare orchid we note that the peculiar association of species which is found on Caribou Bog (and so far as we know on no other bog of New England) is repeated in many of its details on the famous Bergen Swamp in Genesee County, New York, a swamp which "has long been considered one of the most interesting botanical points in western New York,<sup>3</sup>" and in similar marshes in Wayne County, New York.<sup>4</sup> Thus, it is unusual in bogs of New England and New York to find such calciphile species<sup>5</sup> as *Valeriana uliginosa*, *Parnassia caroliniana*, and *Cypripedium parviflorum* associated with the calcifuge *Ledum groenlandicum* and *Arethusa bulbosa* and the commonly maritime *Triglochin maritima*; yet these plants of the Crystal bog are found in Bergen Swamp and in the marshes of Wayne County. It is also unusual to find the calciphile *Carex vaginata*, *C. gynocrates*, and *Tofieldia glutinosa*, the local (possibly calciphile) *Lonicera oblongifolia*, the commonly maritime *Phragmites communis*, and such a characteristic

<sup>1</sup> For notes on a few of the characteristic Bryophytes of Caribou Bog see J. F. Collins, RHODORA, x, 37 (1908).

<sup>2</sup> The report of *H. leucophaea* from the Dead River region (Bull. Josselyn Bot. Soc. no. iii, 19) was based upon an anomalous *H. fimbriata*.

<sup>3</sup> Beckwith & Macauley, Proc. Rochester Acad. Sci. iii, 10 (1894).

<sup>4</sup> For notes on these swamps see Beckwith & Macauley, Plants of Monroe County, New York, and adjacent Territory — Proc. Rochester Acad. Sci. iii, 1-150 (1894).

<sup>5</sup> The plants here spoken of as calciphile are commonly found in eastern Canada, New England and New York only on calcareous soils, while the calcifuge species are rarely (at least with us) found upon calcareous soils.

arctic-alpine sedge as *Scirpus caespitosus* (which with us is usually calcifuge) growing together, but they are common on Caribou Bog and also in Bergen Swamp. Similarly, in the Wayne County marshes and in Caribou Bog are other strange companions: the calciphile boreal *Drosera linearis*, the calcifuge boreal *Eriophorum callitrix* and *Andromeda glaucophylla*, the characteristic prairie orchid, *Habenaria leucophaea*, and the chiefly coastal *Carex exilis*; while in the Wayne County marshes and in Bergen Swamp, though not at Crystal, is the coastal *Myrica carolinensis*.

These three bog-areas, then, are very similar in their vegetation and are characterized by a remarkable aggregation of rare or local species derived from very dissimilar floras: some of the species being characteristic of the prairies of the interior, others as typical of the Atlantic coast or even of our salt marshes; some well known northern calciphile, others ordinarily as distinctly calcifuge species. The association of these plants, especially such species as *Triglochin maritima*, *Phragmites communis*, *Scirpus caespitosus*, *Tofieldia glutinosa*, *Habenaria leucophaea*, *Arethusa bulbosa*, *Drosera linearis*, and *Lonicera oblongifolia*, some of which are entirely unknown on other bogs of New England and New York, indicates some common feature of these bogs which it will be very enlightening to work out. A somewhat similar association of plants, with a slight variation in the exact species, occurs in some of the marly bogs on the coast of the Gaspé Peninsula, where there is a remarkable mingling of marl-swamp types with the characteristic plants of sphagnum bogs and even of brackish or saline shores. Whether in these marshes there is a rare combination of calcareous, saline, and peat-bog conditions is a matter which awaits further study.

From Crystal we returned to Pembroke, spending our last week there in collecting the fruiting Blackberries and Thorns and in closing off the summer's work. On the way back to Boston we were tempted by the extensive outcrops of limestone in the neighborhood of Rockland to visit that city of lime-quarries with the hope of finding interesting coastal plants. In this, however, we were not wholly satisfied, for the rock seemed very hard and the soil sterile as compared with the softer limestones and limy slates and the extremely fertile soil we had just seen in Aroostook County. Being somewhat disappointed by the comparative sterility of the Rockland region we cast about for something better and decided to spend our last half-day of field-work in

Maine in the neighborhood of Bath, the famous ship-building town. We knew that in West Bath Miss Furbish had a station (one of very few in New England) for *Rosa acicularis* Lindl., var. *Bourgeauiana* Crépin, and that not far from Bath, by Winnegance Creek, was the only station in Maine (also discovered by Miss Furbish) for *Samolus floribundus* HBK.

Arriving at Bath we hired a good horse and genial driver and started for Winnegance. The country was rocky and sandy, with *Rubus villosus* Ait., *Rhus copallina* L., and *Vitis Labrusca* L. indicating very clearly that we were no longer in a boreal region. Upon reaching Winnegance we had only a short time to explore and very soon it was evident that a most superficial survey of the broad tidal marshes along Winnegance Creek would absorb every minute we could give. Here indeed were *Samolus floribundus* HBK., *Lophotocarpus spongiosus* (Engelm.) J. G. Smith and other rare plants of tidal estuaries already collected by Miss Furbish. But we were more excited by the unlooked-for species: great colonies of *Scirpus fluviatilis* (Torr.) Gray, higher than our heads, and heretofore known from Maine only through an unverified report of its occurrence at Perry<sup>1</sup>; *Limosella aquatica* L., var. *tenuifolia* (Wolf) Pers. also on the doubtful list as a Maine plant; *Typha angustifolia* L. and *Cyperus Nuttallii* Eddy, somewhat north-east of their supposed limits; and acres of *Eleocharis rostellata* Torr., a species not previously known in Maine, which tripped us up with its long wiry arching and "tipping" culms; and many other local plants — *Eleocharis olivacea* Torr. &c.— already known from the region. But the greatest prize of the day was a *Bidens* of the tidal flats, which was abundant at and below high-water mark, so that its foliage and heads were disagreeably covered with silt and stranded eel-grass. This was *Bidens hyperborea* Greene, a characteristic halophytic species, formerly known from Hudson Bay and from river-estuaries and salt marshes of the Gaspé Peninsula and recently discussed in RHODORA.<sup>2</sup> This very hurried glimpse at Winnegance Creek and many fleeting glimpses of the coastal region about Bath and eastward and again toward Brunswick indicated that in these tidal estuaries and on the lower reaches of the Androscoggin and the Kennebec and about Merry-meeting Bay is a region of great botanical interest, easily reached and apparently full of surprises for him who will defy the marsh mos-

<sup>1</sup> Goodale, Agric. and Geol. Me. (1861) 128.

<sup>2</sup> Fernald, RHODORA, x, 201-203 (1908).

quitos and overlook the other discomforts of botanizing in a muddy and oozy district.

The half-day at Winnegance proved a brilliant finish for our outing in Maine, but as we look back over the entire summer, to the Washington County coast, the Aroostook and Meduxnekeag Valleys, and Caribou Bog, we feel that we did well to visit these regions, for besides what is here related we made profitable studies on a score or more of taxonomic problems, some of which are already worked out, others awaiting further study. We also did what we could to verify the accounts formerly given of the vegetation of eastern Maine; and, though "X" seems from his over-enthusiastic language to have been a possible forerunner of the Maine coast land-boomer, his estimate was perhaps no more inaccurate than that of William Oakes. At any rate, if Oakes's condemnation of the State of Maine has not already been proved too sweeping, we feel that the above notes and those which follow in more compact form are evidence that he erred in judgment when, in 1828, he wrote to Robbins that he was "convinced that no great accessions to the N. E. Flora, and of absolutely new plants hardly any, are to be expected from the State of Maine."

(To be continued.)

## A NEW HYBRID CORNUS (*CORNUS RUGOSA* × *STOLONIFERA*).

ALFRED REHDER.

IN the summer of 1906 a specimen was received at the Arnold Arboretum of a *Cornus* collected by Mr. B. H. Slavin in Seneca Park, Rochester, New York, and accompanied by a note saying that it seemed to be different from *Cornus stolonifera*. A plant sent to the Arboretum in the spring of 1908 flowered and fruited last year, which gave me the opportunity to study also living material. I arrived at the conclusion that this dogwood could hardly be anything else than a

hybrid between *Cornus rugosa*<sup>1</sup> and *C. stolonifera*, as its characters are intermediate between these two species which grow together in the locality where a few individuals of the form in question were found. Also the fact that the pollen of this supposed hybrid contains a large percentage of incompletely developed grains is in favor of the hybrid origin of this plant.

This is the second hybrid observed in the genus *Cornus*; the first being a cross between *Cornus candidissima* Marsh. (*C. paniculata* L'Hérit.) and *C. obliqua* Raf. (*C. Purpusi* Koehne) described by me some years ago as *C. Arnoldiana*.<sup>2</sup> As the second cross is now also in cultivation at the Arboretum and will be propagated and distributed, it seems advisable to bestow on it a binomial designation and it may appropriately bear the name of its discoverer.

***Cornus Slavini*** (*C. rugosa* × *stolonifera*) n. hybr. Tall shrub of the habit and aspect of *C. stolonifera* but with the stems more strictly upright; young branchlets greenish at first but becoming bright purple toward the end of the year and marked with dark longitudinal specks, remaining purple during the second and third year and furnished with small lenticels. Leaves oval or ovate to broadly ovate, acuminate, generally rounded at the base, 6–12 cm. long and 4 to 7 cm. broad, dark green above and furnished with scattered hairs, glaucous beneath and more or less villous, the hairs of the leaves of the sterile shoots being more appressed, while those of the flowering shoots are more spreading and villous particularly on the veins. Inflorescence mostly hemispherical with opposite slightly distant branches and a distinct central axis, covered with a brownish villous tomentum. Flowers appearing about the middle of June, nearly pure white. Fruits end of July, subglobose or ovoid, pale blue, bluish white or nearly

<sup>1</sup> *Cornus rugosa* Lamarck, Encycl. Méth. II. 115. 1786, cf. also III., p. IV. (*C. circinata* L'Héritier, *Cornus*, 7, tab. 3. 1788). Though almost universally known as *C. circinata*, the application of the rule of priority makes it necessary to give preference to the name *C. rugosa* Lamarck which for some inexplicable reason seems to have been entirely overlooked until quite recently. The same would apply to *C. racemosa* Lamarck (l. c. 116), which has priority over *C. paniculata* L'Héritier, if *C. candidissima* Marshall (Arb. Am. 35. 1785) is not considered valid on account of its insufficient description.

<sup>2</sup> *Cornus Arnoldiana* Rehder in Sargent, Trees & Shrubs, I. 79, tab. 40. 1903. There can be hardly any doubt that *Cornus Purpusi* Koehne, figured in Trees & Shrubs I. 77, tab. 39, is identical with *Cornus obliqua* Rafinesque (Western Review I. 228. 1819); Rafinesque gives there a detailed description extending over a whole page, while in the place usually quoted (Ann. Nat. 13. 1820) the description is much shorter. I am still of the opinion that *C. obliqua* should be considered a species distinct from *C. Amomum*; its characters being well marked and its geographical range different. Only in New England, where the ranges overlap, do intermediate forms occur.

white, 6-8 mm. high; stone ovoid, oblique, slightly compressed, abruptly pointed at the apex, marked with longitudinal lines and about 5 mm. high, sometimes faintly ribbed.

The hybrid resembles in habit *Cornus stolonifera*, but is more upright; the branches are deep purple as in that species, but marked during the first year with longitudinal short dark lines, but smaller, less numerous and less conspicuous as they are in *C. rugosa*. The leaves resemble in shape those of *C. rugosa*, but are distinctly glaucous beneath; their pubescence is more like *C. stolonifera* in the sterile shoots and more like *C. rugosa* in the flowering shoots, also as regards the pubescence of the upper surface of the leaves which in *C. stolonifera* consists of forked hairs with almost equal appressed arms, while in *C. rugosa* the arms are unequal with the longer arm spreading and wavy or the hairs are simple, particularly on the veins, forming a villous tomentum soft to the touch. On the lower surface the epidermal cells bear papillae with connecting ridges. In *C. stolonifera* and the hybrid these are more closely set around the stomata and form rings, while in *C. rugosa* they are more evenly distributed over the whole surface. The inflorescence resembles more that of *C. stolonifera*, while in *C. rugosa* the ramifications are nearly whorled and a central axis is hardly distinguishable. The color of the flowers is between the pure white of *C. stolonifera* and the creamy white of the *C. rugosa*, and the time of flowering lies between the two. The fruits are usually ovoid as in *C. stolonifera*, but rarely white, mostly more or less bluish; the stone shows the longitudinal lines of *C. stolonifera*, but is less compressed and sometimes faintly ribbed; from *C. rugosa* it differs in being somewhat compressed, higher than broad and distinctly pointed at the apex.

NEW YORK: Seneca Park, Rochester, June 9, 1905, August 1, 1905, *B. H. Slavin*; July 15 and 31, 1906, *J. Dunbar*; June 16 and July 25, 1907, *B. H. Slavin*. MAINE: Piscataquis Co., valley of the Piscataquis River, gravelly shore, Dover, July 19, 1895, *M. L. Fernald*, No. 305. I have little doubt that the Maine specimen represents the same hybrid, particularly as the two supposed parent species also occur in the locality where it was collected.

The villous pubescence of the under surface of the leaves, though the most obvious and prominent character to distinguish the hybrid from *Cornus stolonifera*, must be used with some caution, for toward the northeastern limit of the range of that species forms occur which also

have the pubescence of the leaves at least partly villous. It is, however, hardly advisable to consider these specimens as representing a distinct variety or form, as the villous character of the pubescence does not seem to be very constant; sometimes the lower leaves of a shoot show a distinctly villous pubescence, while in the upper leaves all the hairs are straight and appressed. In the herbarium of the Arnold Arboretum and in the Gray Herbarium I have noted the following specimens as having the leaves on the under surface at least partly villous. NEWFOUNDLAND: St. John's, Aug. 1, 1894, *B. L. Robinson & H. Schrenck*, No. 217; Lark Harbour, August 7, 1896, *A. C. Waghorne*; Grand Lake, July 25–Aug. 15, 1906, *Owen Bryant*. QUEBEC: Roberval, Lake St. John, Aug. 22, 1895, *J. G. Jack*; Little Métis, July 17, 1906, *James Fowler*. ONTARIO: Kingston, Wolf Island, July 20, 1898, *James Fowler*.

#### ARNOLD ARBORETUM.

## TWO NEW SPECIES OF UROMYCES ON CAREX.

FRANK D. KERN.

THE number of American species of *Uromyces* on *Carex* is apparently small compared with the number of similar species of *Puccinia*. Up to the present time only four such species of *Uromyces* have been described while there are more than four times as many such species of *Puccinia* known. A preliminary study indicates that there occur some *Uromyces* forms which have been previously undetected.

The *Carex* rusts have usually been considered especially difficult to distinguish and for that reason, perhaps, have not been so well studied or collected as the rusts of many other phanerogamic groups. There is a great similarity in the telial stages of these rusts and the failure to recognize properly the species may be the result of placing too much emphasis on the importance of this stage. Recent studies indicate that it is usually possible to find more distinctive morphological characters in the uredinia. Size of the urediniospores, color and thickness of walls, surface markings, and especially the number and arrangement of the germ-pores may all be taken into account.

A specimen of *Uromyces* on *Carex debilis* var. *Rudgei* from Connecticut has recently been studied which is very striking in the germ-pore character in that it has but one pore in a urediniospore. In this regard it is not only different from all other known *Carex* rusts, either *Uromyces* or *Puccinia*, but so far as the writer knows no species of rust (order Uredinales) has ever been observed, previously, with a single pore in the urediniospores. The location of the pore is also unusual being in the lower part of the spore near the hilum, the scar left by the fall of the pedicel. There are also other differentiating characters but on account of the very notable one of a single pore in the urediniospores a name has been selected specially to distinguish it in that regard. It may be characterized as follows:

***Uromyces uniporulus*** n. sp. Urediniis hypophyllis, sparsis, punctiformibus. 0.1–0.3 mm. diam., mox nudis, pulvinatis, dilute castaneis; urediniosporis globosis v. subglobosis,  $18-21 \times 21-23 \mu$ ; episporio obscure cinnamomeo-brunneo, ca.  $1.5 \mu$  crasso, rare et distincte echinulato; poro germinationis 1, infra, hilo prope, instructo.

Teliis hypophyllis, sparsis, ovatis v. oblongis, 0.2–0.5 mm. longis, mox nudis, pulvinatis, obscure castaneis; teliosporis obovatis,  $13-16 \times 19-27 \mu$ ; episporio cinnamomeo-brunneo, ca.  $1 \mu$  crasso, apice incrassato ( $4-7 \mu$ ), levi.

Hab. in foliis *Carex debilis* var. *Rudgei*, Central Village, Connecticut, Aug. 19, 1908, John L. Sheldon.



Fig. 1. Three urediniospores of *Uromyces uniporulus* showing the single pore in the lower part of the cell, near the hilum.

The studies have also revealed another new species of *Uromyces* on *Carex* which has distinctive germ-pore characters. It has four equatorial pores, an arrangement fairly common in some groups of rusts, but seemingly rare in the *Carex* rusts. None of the other present known species of *Uromyces* on *Carex*, and only one similar species of *Puccinia* has this character. In addition to the microscopical characters this new species is distinctive in the gross appearance of the uredinia and telia. The sori, especially the telia, have an unusually strong development. The following name is here proposed with accompanying description.

***Uromyces valens*** n. sp. Urediniis plerumque hypophyllis, sparsis, ovatis v. oblongis, 0.5–1 mm. longis, epidermide diutius tectis, pulverulentis, cinnamomeis; urediniosporis ellipsoideis,  $16-19 \times 19-26 \mu$ ,

episporio cinnamomeo-brunneo, ca.  $1.5-2\ \mu$  crasso, distincte echinulato; poris germinationis 4 aequatorialibus instructis.



Fig. 2. Two urediniospores of *Uromyces valens* showing the four equatorial pores.

Teliis plerumque hypophyllis, sparsis, oblongis v. linearibus,  $0.5-2\ \text{mm.}$  longo, epidermide diu tectis, pulvinatis, atrobrunneis; teliosporis obovatis v. oblongo-obovatis,  $16-23 \times 26-39\ \mu$ ; episporio castaneo-brunneo, ca.  $1.5-2\ \mu$  crasso, apice incrassato ( $7-9\ \mu$ ), levi.

Hab. in foliis *Carex urtriculatae*, Mattsville, Indiana, Aug. 8, 1905, Guy West Wilson, 5130.

The following key based entirely on uredinial characters will serve to show how the present described American species of *Uromyces* on *Carex* may be identified.

Germ-pores equatorial.

Germ-pores 4, urediniospores medium large, wall cinnamon-brown.

*U. valens* Kern

Germ-pores 2 (occasionally 3).

Urediniospores medium large ( $15-19 \times 19-26\ \mu$ ).

Wall light cinnamon-brown, finely verrucose-echinulate.

*U. Solidaginis-carecis* Arth.

Wall golden-brown, coarsely and sparsely echinulate.

*U. caricina* E. & E.

Urediniospores small ( $10-15 \times 15-19\ \mu$ ), wall golden-brown.

*U. minutus* Diet.

Germ-pores extra-equatorial.

Germ-pores 2, superequatorial, wall cinnamon-brown. *U. perigynius* Hals.

Germ-pores 1, below, near the hilum, wall dark cinnamon-brown.

*U. uniporulus* Kern.

*Uromyces Solidaginis-carecis* has been reported from Nova Scotia and Maine to Indiana and Wisconsin, and in Colorado. The telial hosts at present known are *Carex deflexa*, *C. flava*, *C. gracillima*, *C. lanuginosa*, and *C. pubescens*. Cultures of this species have been made showing its aecial stage to be on species of *Solidago*. The aecia have been collected in Maine on *Solidago rugosa* and in Indiana on an undetermined *Solidago*. *U. caricina* is known only on *Carex scoparia* from Delaware and New York. *U. minutus* is a southern species found along the gulf coast from Florida to Texas. *Carex triceps* is the only determined host upon which it has been found. *U. perigynius* is a little known species which has been collected only twice, once in Iowa and once in Wisconsin. Both collections are on *Carex intumescens*. *U. uniporulus* is known only from the type locality in New England. *Uromyces valens* occurs on *Carex lupulina* in addition

to *C. articulata* but the range so far as known at present is restricted to central Indiana.

Much culture work needs to be done with the group. Only *U. Solidaginis-caricis* has been culturally connected with its aecial stage. There is no clue concerning the aecial relationship of the new species or of the other three discussed.

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## PLANTS OF EASTERN MASSACHUSETTS FLOWERING IN APRIL, 1910.

The remarkably forward season, especially during early spring when the buds were expanding, has been commented upon very generally and it has seemed to several members of the New England Botanical Club desirable to place upon record a list of such plants of eastern Massachusetts as they have seen in flower or fruit during the month of April. The list is based upon the observations of only a few members, none of whom were often in the field, and as no attempt was made to secure "record" dates it is very certain that others will have notes of even earlier blooming, and probably some species to add to the list. As it stands, the list is a remarkable one for April in the Boston district. The records for April 23 (except for *Uvularia*) were made just north of the Massachusetts line in the town of New Ipswich, New Hampshire, but they are all of plants which extend along the wooded hills into Ashby or Ashburnham and southward. It is hoped that this list, though based on fragmentary records, will be of sufficient interest to call out further notes, that we may have a complete record for future reference of the early flowering species of 1910.

In the following list the dates, unless otherwise explained, are of the earliest flowers noticed, and the records, except for April 23, are all from within 20 miles of Boston. Some species without dates recorded had been seen in flower several times before the record of dates was seriously considered.

*Poa annua* (Apr. 2).

*Eriophorum callitrix* (29 or 30, in  
fruit in small sheltered bog).

*Eriophorum gracile* (29 or 30, in  
fruit in wet open meadows).

*Carex stricta* (30).

- Carex umbellata* (21, fruit nearly mature).  
*Carex communis* (30).  
     " *varia* (30).  
     " *pennsylvanica* (before the 17th).  
     " *laxiflora* (21).  
*Arisaema triphyllum* (21).  
*Symplocarpus foetidus* (9, and doubtless much earlier).  
*Luzula saltuensis* (23).  
     " *campestris*, var. *multiflora* (21).  
*Oakesia sessilifolia* (17-21).  
*Uvularia perfoliata* (23).  
*Erythronium americanum* (2, few flowers, sunny slope).  
*Polygonatum biflorum* (30, first flowers only).  
*Trillium erectum* (23).  
     " *cernuum* (17-23, sunny bank).  
*Salix fragilis* (30).  
     " *alba*, var. *vitellina* (30).  
     " *discolor* (fruit, 21).  
     " *humilis*.  
     " *rostrata* (21).  
*Populus tremuloides* (2).  
     " *grandidentata* (21, fruiting).  
*Myrica asplenifolia* (21).  
     " *Gale* (17-23).  
*Corylus americana*.  
     " *rostrata*.  
*Ostrya virginiana* (21).  
*Carpinus caroliniana* (21).  
*Betula populifolia* (21).  
*Alnus incana*.  
     " *rugosa*.  
*Ulmus campestris*.  
     " *americana*.  
*Comandra umbellata* (29 or 30, in scrub land).  
*Stellaria media*.  
     " *uliginosa* (29 or 30, springy spot in open sheltered pasture — usually 3 weeks later).  
*Cerastium vulgatum*.  
*Claytonia caroliniana* (23).  
*Ranunculus abortivus* (21).  
     " *allegheniensis* (young fruit, May 1).  
*Ranunculus fascicularis* (21).  
     " *bulbosus* (30).  
*Thalictrum dioicum* (21).  
*Anemonella thalictroides* (17-23).  
*Hepatica triloba* (2).  
*Anemone quinquefolia* (2, few flowers at sheltered border of thicket).  
*Caltha palustris* (2).  
*Coptis trifolia* (before the 17th).  
*Aquilegia canadensis* (21).  
*Actaea rubra* (29 or 30).  
*Berberis vulgaris* (30).  
*Benzoin aestivale* (2, sunny slope).  
*Sanguinaria canadensis*.  
*Draba verna* (fruit, May 2).  
*Capsella Bursa-pastoris* (3).  
*Barbarea vulgaris* (29 or 30).  
*Saxifraga virginiana* (9).  
*Chrysosplenium americanum* (2).  
*Ribes oxycanthoides* (23).  
     " *prostratum* (23).  
*Amelanchier canadensis* (before the 17th, on sunny hillside).  
*Amelanchier oblongifolia* (21).  
     " " var. *micro-petala* (in full bloom, May 1).  
*Fragaria virginiana* (21).  
*Potentilla pumila* (2).  
     " *canadensis*, var. *simplex* (30).  
*Rubus triflorus* (30).  
*Prunus spinosa* (19).  
     " *pennsylvanica* (17-23).  
     " *cuneata* (29 or 30, eskerslopes, not specially protected).  
*Prunus avium* (21).  
     " *nigra* (23).  
*Geranium maculatum* (29 or 30, open sunny woods, 1 flower only).  
*Acer saccharum* (23).  
     " *rubum* (9).  
*Viola pedata*, var. *lineariloba* (13).  
     " *cucullata* (21).  
     " *papilionacea* (before the 17th).

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| <i>Viola sororia</i> (21).   | <i>Vaccinium atrococcum</i> (21).                        |
| “ <i>septentrionalis</i> (21).   | <i>Phlox subulata</i> (30).                              |
| “ <i>fimbriatula</i> (before the 17th).  | <i>Trientalis americana</i> (29 or 30).                  |
| “ <i>sagittata</i> (21).   | <i>Myosotis virginica</i> (17–23).                       |
| “ <i>lanceolata</i> (30).  | <i>Veronica serpyllifolia</i> (17–23).                   |
| “ <i>pallens</i> (9).  | “ <i>arvensis</i> (17–23).                               |
| “ <i>rotundifolia</i> (passing, 23).   | <i>Houstonia caerulea</i> (2).                           |
| “ <i>scabriuscula</i> (21).  | <i>Lonicera caerulea</i> , var. <i>villosa</i> (24).     |
| “ <i>conspersa</i> (19, with some flowers faded, sheltered meadow at edge of woods). | “ <i>canadensis</i> (23).                                |
| <i>Panax trifolia</i> (23).  | <i>Viburnum alnifolium</i> (23).                         |
| <i>Cornus florida</i> (in full bloom, May 1).  | <i>Antennaria Parlinii</i> (29 or 30, sunny brook-bank). |
| <i>Rhododendron canadense</i> (30).  | <i>Antennaria canadensis</i> (21).                       |
| <i>Andromeda glaucophylla</i> (29 or 30).  | “ <i>plantaginifolia</i> (21).                           |
| <i>Chamaedaphne calyculata</i> (9, in a warm open meadow).                           | “ <i>neodioica</i> (21).                                 |
| <i>Epigaea repens</i> (23, flowers fading).  | “ <i>neglecta</i> (17).                                  |
| <i>Arctostaphylos Uva-Ursi</i> (13, sunny hill-top).                                 | <i>Tussilago Farfara</i> (2).                            |
| <i>Vaccinium pennsylvanicum</i> (21).  | <i>Petasitis vulgaris</i> (2).                           |
| “ <i>corymbosum</i> (29 or 30).  | <i>Taraxacum officinale</i> (15).                        |
|  | “ “ var. <i>palustre</i> (21).                           |
|  | “ <i>erythrospermum</i> (21).                            |

## SOME FACTS RELATING TO *SILENE ANTIRRHINA*.

WALTER DEANE.

WHILE studying recently some specimens of the Sleepy Catchfly, *Silene antirrhina* L., from Oak Island, Revere, Massachusetts, collected by Mr. C. F. Batchelder on June 11, 1909, I was struck by the fact that of the twelve plants examined five had the joints of the stems entirely free from the glutinous bands that I had always supposed were present; while all the plants were scabrous or pubescent at the base. A reference to the 7th edition of Gray's Manual showed that the species comes under the section, "Glabrous, a portion of each joint of the stem glutinous." This started me to examine the specimens of the species that were readily available. Besides those in my own herbarium and the herbaria of Dr. G. G. Kennedy and Judge J. R. Churchill, I studied those in the Gray Herbarium, including 56 sheets of this species, and those in the herbarium of the New

England Botanical Club, 17 sheets of *Silene antirrhina* being there. The results were interesting. About 100 sheets, embracing at least from 200 to 300 specimens were examined. Every plant was scabrous or pubescent at the base, with the exception of one from Texas, collected by F. Lindheimer in 1843 and marked in Dr. Asa Gray's handwriting, "var. *laevigata*." This is described in *Plantae Lindheimerianae*, Part I, 217 (1845), by George Engelmann and Asa Gray as follows, "21 [*Silene antirrhina*] var. *laevigata*; the leaves smooth, and with smooth margins—Galveston." It is to be noticed that an examination showed that not only the leaves but the entire plant is glabrous.

None of the specimens had glutinous bands on any of the lower internodes while twenty-nine plants had none at all. I suspected at first that these bands might be absent in the earlier stages in the life of the plant, but might appear later in the season. This, however, was disproved by the fact that of the twenty-nine plants mentioned above eight only were in flower while twenty-one were in fruit. The glutinous bands, accordingly, were absent through the life of these plants and doubtless this is true of all others that show at any time a lack of these bands. I will say here that in making these observations I used a strong pocket lens, as being all that is required for systematic work of this kind.

An examination of a number of Manuals in which this species is described shows that the points above mentioned are all well characterized only in Torrey and Gray's *Flora of North America*, i. pt. 2, 191 (1838) as follows, "Stem . . . puberulent or scabrous at the base, a portion of the upper internodes usually viscid." I noticed also that occasionally the plants were slightly pubescent above and that the leaves were always ciliate at the base. This last fact is mentioned in some of the Manuals. In the above details the species might be characterized as follows:—Scabrous to pubescent at the base, upper portion generally glabrous, sometimes slightly pubescent, leaves ciliate at base; a portion of one or more of the upper internodes generally, but not always, glutinous.

It is interesting to note how variously the plant has been described as regards the special points noticed above. One statement or another is wrong, and the effect of this is often far-reaching and hard to eliminate. I will cite a few cases: Bigelow's *Florula Bostoniensis*, ed. 2, 183 (1824) and ed. 3, 194 (1840), "Stem smooth . . . Leaves . . . sub-

ciliate at base.”; Darlington’s *Flora Cestrica*, 273 (1837), “Stem . . . smoothish . . . a portion of the internodes of the stem and branches at length coated with a dark purple viscid matter.”; Gray’s *Manual*, ed. 1, 59 (1848), “Nearly smooth . . . some of the upper joints viscid.”, ed. 4, 56 (1866), “Glabrous throughout; a portion of each joint of the stem mostly glutinous.”; Wood’s *Class-Book of Botany*, 256 (1877), “Nearly smooth . . . A few of the upper internodes are viscidly pubescent above their middle.”; Chapman’s *Flora of the Southern United States*, 52 (1884), “smoothish, clammy below the upper joints.”; Britton and Brown’s *Illustrated Flora of the United States and Canada*, ii. 11 (1897) and Britton’s *Manual of the Flora of the Northern States and Canada*, 390 (1901), “puberulent or glabrous, glutinous about the nodes.” These are a few instances in many that I examined where the facts relating to the pubescence and glutinous character are either not adequately given or are stated without proper qualifications.

CAMBRIDGE, MASSACHUSETTS.

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FLOWERING PLANTS AND FERNS OF CONNECTICUT.—In January, 1903, the numerous botanical workers in Connecticut became organized as the Connecticut Botanical Society. Since that date the Society has maintained an enthusiasm and a standard of investigation and productiveness which it is inspiring to witness. During its short career the Society has issued, as *Bulletins of the State Geological and Natural History Survey*, Professor White’s *Hymeniales of Connecticut*, Dr. Clinton’s *Ustilagineae, or Smuts, of Connecticut*, Conn and Webster’s *Algae of the Fresh Waters of Connecticut*, Evans and Nichols’s *Bryophytes of Connecticut*; and now we have the *Catalogue of the Flowering Plants and Ferns of Connecticut*.<sup>1</sup>

The State and the Society as well as botanists throughout the country are particularly to be congratulated upon the efficient group of men to whom the work was entrusted, for it would be difficult to find in any community a committee of six men who combine so admirably scholarly ideals and attainments with intimate field knowledge of the flora. It is interesting to note that all the members of the committee are amateurs to whom the work has been strictly a labor of love.

The *Catalogue* consists of 569 pages, the first 16 occupied by introductory matter of much interest, the last 105 by an exhaustive index.

<sup>1</sup> *Catalogue of the Flowering Plants and Ferns of Connecticut growing without Cultivation*. By C. B. Graves, E. H. Eames, C. H. Bissell, L. Andrews, E. B. Harger, and C. A. Weatherby, Committee of the Connecticut Botanical Society. Hartford, 1910 (*Bulletin no. 14, Connecticut Geological and Natural History Survey*.)

In the Catalogue proper a liberal interpretation has been adopted and every species which has shown a tendency to care for itself or to spring up spontaneously has been included. Many of these, of course, are merely fugitives which have not been counted in the summary of Connecticut species. Excluding the 169 fugitives, the Catalogue enumerates 2,228 vascular plants, giving under each a careful summary of all that is known of its occurrence in the state, its habitats, relative abundance in different sections, flowering and fruiting seasons, colloquial names, and items of economic or biological interest. A novel feature in such a work is the introduction in parentheses after the Latin name of a translation of the specific epithet, a feature which will do much to assist those whose Latin is rusty or wanting. The nomenclature of the 7th edition of Gray's Manual is followed and synonyms are inserted freely. It is a pleasure to note that the quasi-colloquial names which have been much in vogue in some English and American Floras are omitted and that an effort has been made to include only such as are actually in use or of folk-origin. Thus, the *Carices*, which to most untechnical people are "grasses" or at best merely sedges, are not encumbered with book-names, *Carex stricta* alone in the genus being distinguished by colloquial names: "Sword Grass" and "Nigger-heads." *Corallorrhiza odontorhiza* is distinguished from the other members of the genus as "Crawley Root," "Dragon's Claws" and "Chicken-toes." Other items might be discussed in detail, but the book will speak for itself to all who are interested in it. The present writer may say, however, that the Catalogue seems to him to be all that had been hoped for — a well digested and painstaking record of our present knowledge of the occurrence of the Flowering Plants and Ferns of Connecticut, prepared by a committee whose personnel is a guarantee that everything in it may be relied upon. The State is following a liberal policy in gratuitously distributing its bulletins (postage on No. 14 fifteen cents) to public libraries, colleges, scientific men, and others who specially need them in their work, especially if they are citizens of Connecticut. To others the charge for the present Bulletin is seventy-five cents, postpaid. Applications should be sent to GEORGE S. GODARD, *State Librarian*, Hartford, Conn.— M. L. F.

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## Gray's New Manual of Botany—Seventh Edition

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